

AG-ENG TTB

Library



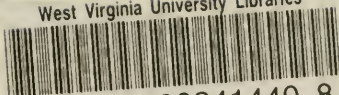
West Virginia University

EVANS DALE LIBRARY

WEST VIRGINIA

UNIVERSITY

West Virginia University Libraries



3 0802 100341440 8

West Virginia University Library

This book is due on the date indicated below.

AR 29 1965

APR 4 1966

FEB 21 '72

SEP 20 1979

MAY 27 1981

RETURNED

2 JUL '82 2 00 PM '82

MAR 26 1984

RETURNED

APR 20 1990

RETURNED

MAY 12 '90

PAID

Evansdale Library

RETURNED

MAY 19 1994

MAY 31 '94

BULLETIN 48.

WEST VIRGINIA

AGRICULTURAL EXPERIMENT STATION

Raspberries.

L. C. CORBETT.

DECEMBER, 1896.

FAIRMONT;
INDEX STEAM PRINTING HOUSE.
1897.

BOARD OF REGENTS OF THE WEST VIRGINIA UNIVERSITY.

Name of Regent.	P. O. Address.
S. F. REED,	Clarksburg.
EDGAR P. RUCKER,	Welch.
W. E. HAYMOND,	Sutton.
CHARLES BURDETTE HART,	Wheeling.
JAS. H. STEWART,	Raymond City.
JAS. F. BROWN,	Charleston.
JOHN A. ROBINSON,	Patterson's Depot.
C. L. SMITH,	Fairmont.
GEO. F. EVANS,	Martinsburg.

MEMBERS OF THE STATION COMMITTEE.

JOHN A. ROBINSON.	W. E. HAYMOND.
CHARLES BURDETTE HART.	

PRESIDENT BOARD OF REGENTS,	JOHN A. ROBINSON.
PRESIDENT UNIVERSITY,	J. L. GOODKNIGHT, LL. D.
TREASURER,	A. R. WHITEHILL, Ph. D.
AUDITING OFFICER,	JOSEPH MORELAND.

STATION STAFF.

JOHN A. MYERS, Ph. D.	Director.
A. D. HOPKINS, Ph. D.	Entomologist.
BERT H. HITE, M. S.	Chemist.
L. C. CORBETT, M. S.	Agriculturist and Horticulturist.
W. E. RUMSEY, B. S. Agr.	Assistant Entomologist.
J. M. JOHNSON, M. S.,	Assistant Agriculturist.
M. ELIZABETH HEERMANS,	Stenographer.

WEST VIRGINIA
AGRICULTURAL EXPERIMENT STATION

Morgantown, W. Va.

WHY NOT GROW RASPBERRIES?*

The origin of the raspberry, like many plants whose history antedates that of existing civilized nations, is somewhat mystical.

The European berry takes its name from its supposed place of origin, Mount Ida; the Latin terminology making it *ideus*; the generic name *Rubus* comes from its close relation to the rose. From the botanists point of view this relation is very complete, but from our standpoint we can only see a general resemblance in the habit of the two plants and particularly in their armature, both always on the defensive, each tempting the unwary with a prize, but just as he puts forth his hand to possess it, there comes the warning and the reminder that the sweetest rose has the sharpest thorn.

Just what part these thorns play in the economy of nature is hard to say, but certain it is that through cultivation they can be dispensed with as is the case in our Davison's Thornless Raspberry and some of the blackberries.

The origin of our raspberry is like that of our own people, better known to us than that of other nations. The American raspberries, for there are two of them—the red and the black,—are both familiar to every lad who has passed along one of the

*Read before the meeting of the State Horticultural Society held at Wellsburg, W. Va., in 1896.

venturing in the raspberry business. The necessity of cheapening the cost of production and of overcoming the difficulty of obtaining pickers, developed the berry picker, or bat, as it really is. This consists of a shallow box made with a flaring front and provided with a canvas covered frame some three feet high, extending across the ends and back side of the box. With a hook in one hand and a light bat or loop of ratan in the other, the bushes are drawn over the box, and, as the vine is struck with the bat, the ripened fruits rattle into the box. The canvas covered frames serving as a back-stop, cause the fruits to fall into the box. With this invention a skillful operator can gather seven to eight bushels of berries a day, while the most expert pickers cannot pick over one hundred and twenty to one hundred and thirty quarts; not quite one-half in the same time; and as it usually costs two cents per quart for hand picking, the amount gathered by the man and the machine would have cost \$4.50 had they been gathered by hand; while a skillful batter will not charge more than \$1.50 or \$2.00 a day for his services. A cut of one form of this device is shown in the accompanying Plate XVI.

Here, then, as in gathering grain, American inventive genius has made itself felt. The picker is warmly welcomed by the growers of berries, as it overcomes the difficulty of depending upon hand picking. This, it will be remembered, is only adapted to fruit intended for drying or evaporation, and this is the point I wish to make in this whole discussion.

West Virginia is pre-eminently suited to the growing of raspberries. Energy, coupled with good judgment and an understanding of the business, is what makes business men successful. It is what has made the Hale boys of old Connecticut, such successful growers of peaches, and it is this that will make farming pay in West Virginia.

Curing. The great advantage to be urged in favor of raspberries as a general crop for West Virginia, is in the fact that they can be easily and cheaply cured. This renders them as safe as a cereal grain for purpose of exchange, and furnishes those districts remote from the road, rail or other means of

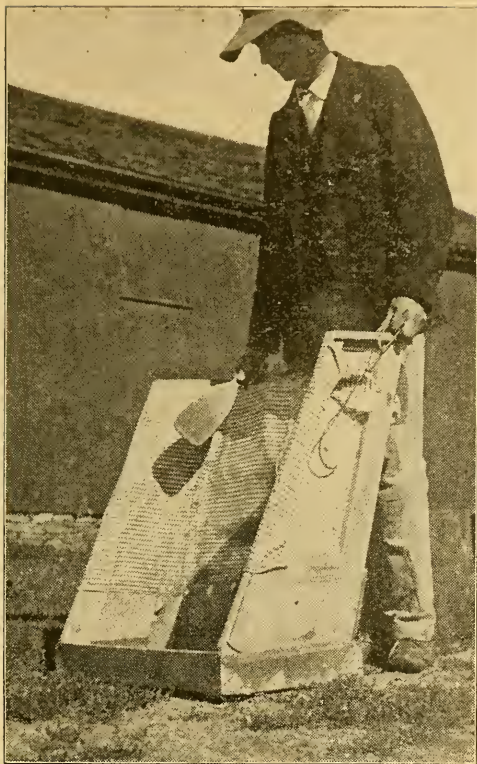


PLATE XVI.—The “Berry Bat” or Picker, page 457.

Form used by I. W. Corbett, Watkins, N. Y.

transportation, a crop that can be easily produced at a profit, and at the same time, one that does not have to be forced upon the market because of its perishable nature, as do strawberries and fresh raspberries. What we must have, until facilities for transportation is improved and extended, is a crop that will stand a long time in transit. The local markets to be sure will take a quantity of fresh fruit, but when we come to contemplate the return from ten acres even, the local market is not capable of coping with such a product in the fresh state.

There are two methods of curing raspberries, both founded

upon the same general principles, inasmuch as they are both drying processes. The product in one case, however, brings from one to three cents per pound less than the other, and is known as "dried berries," while the other fixes the general market price for both. This product is "evaporated." The only difference in the two, lies in the method used in accomplishing the end, however, a higher grade product is obtained which commands a better price.

Without going into details regarding the practical workings of the methods of curing raspberries, a brief statement of the principles may not be out of place.

Solar dried fruit is that which has, by having been spread upon racks, been dried by the heat of the sun. This is usually carried on in the open, but if hot-bed sash or a greenhouse is available, the confined atmosphere and intensified heat of either the permanent or temporary structure can be made use of for the purpose of hastening the process.

Evaporators are variable in the details of their construction, but they are all based on one or two principles, namely, either a direct blast of hot air, or radiation from steam coils. The drying is then accomplished in all cases by hot air, but steam or hot water may be used for heating coils of pipe, in order to produce the air currents. These devices vary from \$15.00 to \$1,500.00 in cost of construction, and there is almost as great variation in the capacity of the various evaporators as there is in the cost of construction. An inexpensive building and evaporator is shown in Plate XVII.

A Word Regarding the Building and Use of an Evaporator.
At first I should advise the construction of a single drier only in each neighborhood where the berries are to be grown. This may be built by individual enterprise or by a co-operative or a stock investment company. Here the product of several farms both of apples and berries can be taken, and, at small cost, converted into a highly commercial article. If, after a man has fully acquired the art of berry growing, he chooses to put up an elevator for himself, there can be no objection. At first, however, go slow; feel your way, learn your art thoroughly

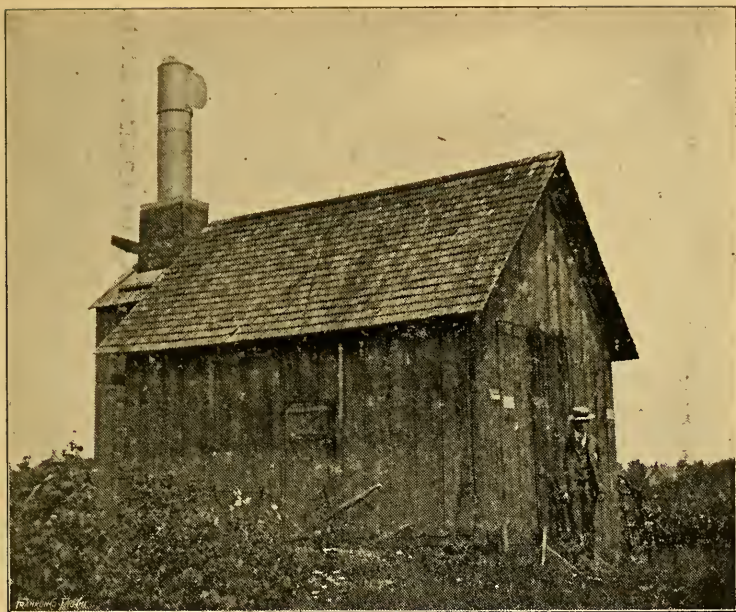


PLATE XVII.—A Cheaper Evaporator, pages 459 and 461.

and expand your equipment as the possibilities of the business warrant.

After having fully determined that an evaporator is needed in any fruit growing community, the question then arises as to what kind is best suited to the needs of that section. To a certain extent this selection of a machine will depend upon the kind of fruit to be dried in it. If apples are to be the mainstay one style may have features superior to another; if berries alone are to be worked, then another form may be the most economical and satisfactory; and if both apples and berries are to be handled, a general purpose machine may be best. In such an evaporator some points of economy or convenience may have to be sacrificed which might have been attained if only a single kind of fruit was to be used. In the long run, however, an evaporator that works well for either berries or apples can be had without much, if any, sacrifice of convenience, and without extra cost.

Styles of Evaporators. In general three styles are used with satisfaction. All are dependent upon super-heated air to accomplish the work, the difference being in the method of applying the heat to the fruit.

The use of an upright flue into which the trays of fruit are placed and moved by means of a lever and latch system from below upwards, forms one of the common and least expensive styles of evaporators. The heat is generated from a large stove or furnace situated in the basement of the building. On the second floor the fruit is prepared and placed on the drying screens. These are then placed in the hot air flue and gradually lifted until they reach the second floor, a distance of about ten feet, when the fruit will have become sufficiently dried to be placed on the curing floor. If the heat is not sufficient to burn the fruit, a tray of fruit can be put in the flue every six or eight minutes, or about as rapidly as they can be prepared. Eight or ten trays are thus placed in the machine each hour, and as it takes, on the average, three hours to change twenty-four to thirty frames, or about twelve bushels of fruit, can be dried in three hours. If the capacity of the evaporator is to be increased, it can be accomplished by increasing the size of the screens or by building more flues. The usual plan for small private concerns is to have only a single shaft; where commercial work is contemplated twin flues are built, i. e., two hot air conduits are placed side by side, and where a large business is done, the number of flues is correspondingly increased. The ordinary size of the frame used is 4x4 feet; some use a 3x4 foot screen; but none larger than 4x4 feet are convenient to handle.

Plate XVIII shows the interior structure of a single flue evaporator capable of drying about four to five bushels per hour, and Plate XVII shows the outside appearance of a still smaller concern of the same general plan.

A fruit drier which has given good satisfaction, and one which is free from the danger of taking fire, is modeled after the plan of the ordinary hop dry-house. It is three stories high. A basement for a hot air furnace and fuel is the first requirement. A hot air chamber or room above this, and of the



PLATE XVIII.—Flue of Hot Air Evaporator, page 461.

[Showing lifting arrangement and opening to admit sieves.]

same dimensions as the drying floor above, is then necessary. About eight feet above this is a floor laid of 1x1 inch slats, placing them about $\frac{3}{4}$ of an inch apart. On top of this floor a canvas is stretched like a carpet, and on this floor covering the fruit for drying is spread. As the drying progresses, it is necessary to turn the fruit with wooden scoops from time to time. In a room of this kind, about twenty-four feet square, three hundred bushels of apples can be dried in twenty-four hours. The floor structure of such a building is shown in Plate XIX.

The one objection to this form of a drier is that the green fruit has to be carried to the top of the building, thus making some form of elevator necessary. Its advantages over other



PLATE XIX —Floor of a Dry-House, page 462.

[Looking from below up.]

forms are cheapness, safety and easy of management. In all other forms an attendant must be at his post twenty-four hours each day; while with this it can be charged at night and left until morning, without danger of burning the fruit.

Another form to be commended because of its safety is that where steam is used in closed circuits. In this style the trays move along a horizontal track over the heated steam pipes. This, it will be noted, keeps the work on a single floor, but the great cost of the coils and boiler for generating the steam are alone sufficient to place the device beyond the reach of all except the largest growers and commercial concerns.

A force draft is sometimes necessary in order to keep a circulation of air in these large steam dry houses. This entails the additional cost of an engine, and unless some other remunerative industry can be run in connection with the fruit drier,

it is hard to conceive of making a \$4,000 to \$5,000 investment pay when the season's work lasts only about four weeks through berry time, and two months at most for apples.

To sum up—a person with less than twenty acres of berries cannot afford a private drier. A simple, inexpensive, direct-acting device is to be preferred to a complicated one.

All things considered, the first and second forms are most desirable, and for a single style my observation leads me to favor the second style described.

L. C. CORBETT.

